

SEQUENCE LISTING

<110> THE JOHNS HOPKINS UNIVERSITY
WORLEY, Paul F.

<120> METHOD OF SCREENING FOR AGENTS THAT MODULATE
IMMUNOPHILIN/PEPTIDYLPROLINE CIS-TRANS ISOMERASE (PPIASE)-HOMER
INTERACTION

<130> JHU1880-1

<140> US 10/518,941
<141> 2003-06-19

<150> PCT/US03/19499
<151> 2003-06-18

<150> US 60/398,511
<151> 2002-06-18

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<170> PatentIn version 3.3

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<222> (3)..(4)
<223> Xaa can be any naturally occurring amino acid

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Pro Pro Xaa Xaa Phe
1 5

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Thr Pro Pro Ser Pro Phe
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Pro Xaa Xaa Phe

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Pro Ser Ser Pro

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Leu Pro Ser Ser Pro Ser Ser Ser Ser Pro

1

5 10

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<212> DNA

<213> Rat

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acaaggaatg tgtataggat aatcagtcta gacggctcaa aggcaataat aaatagcacc 180

atcactccaa acatgacatt tactaaaaca tctcaaaagt ttggccaatg ggctgatagc 240

cgggcaaaca ctgttatgg actggattc tcctctgagc atcatctc aaaatttgca 300

gaaaagtttc aggaatttaa agaagctgct cggctggcaa aggagaagtc gcaggagaag	360
atggaactga ccagtacccc ttcacaggaa tcagcaggag gagatcttca gtctccttta	420
acaccagaaa gtatcaatgg gacagatgat gagagaacac ccgatgtgac acagaactca	480
gagccaaggg ctgagccagc tcagaatgca ttgccattt cacataggtt cacattcaat	540
tcagcaatca tgattaaa	558

<210> 7
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<400> 7

Met Gly Glu Gln Pro Ile Phe Ser Thr Arg Ala His Val Phe Gln Ile			
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Asp Pro Asn Thr Lys Lys Asn Trp Val Pro Thr Ser Lys His Ala Val		
20	25	30

Thr Val Ser Tyr Phe Tyr Asp Ser Thr Arg Asn Val Tyr Arg Ile Ile		
35	40	45

Ser Leu Asp Gly Ser Lys Ala Ile Ile Asn Ser Thr Ile Thr Pro Asn		
50	55	60

Met Thr Phe Thr Lys Thr Ser Gln Lys Phe Gly Gln Trp Ala Asp Ser			
65	70	75	80

Arg Ala Asn Thr Val Tyr Gly Leu Gly Phe Ser Ser Glu His His Leu		
85	90	95

Ser Lys Phe Ala Glu Lys Phe Gln Glu Phe Lys Glu Ala Ala Arg Leu		
100	105	110

Ala Lys Glu Lys Ser Gln Glu Lys Met Glu Leu Thr Ser Thr Pro Ser		
115	120	125

Gln Glu Ser Ala Gly Gly Asp Leu Gln Ser Pro Leu Thr Pro Glu Ser		
130	135	140

Ile Asn Gly Thr Asp Asp Glu Arg Thr Pro Asp Val Thr Gln Asn Ser			
145	150	155	160

Glu Pro Arg Ala Glu Pro Ala Gln Asn Ala Leu Pro Phe Ser His Arg		
165	170	175

Tyr Thr Phe Asn Ser Ala Ile Met Ile Lys
180 185

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Ser Ser Thr Leu
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Ser Ser Ser Leu
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Ala Val Thr Val
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Gly His Arg Phe
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Leu Pro Pro Pro Phe
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Leu Pro Pro Pro Arg
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Leu Leu Pro Pro Phe
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Leu Pro Ser Ser Ala Ser Ser Ser Pro
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Ala Pro Ser Ser Pro Ser Ser Ser Pro
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Leu Pro Ser Ser Pro Ser Ser Ser Ala
1 5 10

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Leu Pro Ser Ser Pro
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<223> Xaa can be any naturally occurring amino acid

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Gly Leu Gly Phe
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Leu Ala Ser Ser Pro Ser Ser Ser Ser Pro
1 5 10

<210> 25
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<212> PRT
<213> Homo sapiens

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Met Cys Pro Gly Ile Pro Gly Pro Arg Ala Glu Ala Ala Val Gly Thr
1 5 10 15

Thr His Pro Phe Ser Ser Pro Gly Ala Trp Leu Gly Ser Gly Ser Gly
20 25 30

Ser Gly Pro Val Gly Ala Pro Pro Pro Ser Pro Gly Leu Pro Pro Ser
35 40 45

Trp Ala Ala Met Met Ala Ala Leu Tyr Pro Ser Thr Asp Leu Ser Gly
50 55 60

Ala Ser Ser Ser Ser Leu Pro Ser Ser Pro Ser Ser Ser Pro Asn
65 70 75 80

Glu Val Met Ala Leu Lys Asp Val Arg Glu Val Lys Glu Glu Asn Thr
85 90 95

Leu Asn Glu Lys Leu Phe Leu Leu Ala Cys Asp Lys Gly Asp Tyr Tyr
100 105 110

Met Val Lys Lys Ile Leu Glu Glu Asn Ser Ser Gly Asp Leu Asn Ile
115 120 125

Asn Cys Val Asp Val Leu Gly Arg Asn Ala Val Thr Ile Thr Ile Glu
130 135 140

Asn Glu Asn Leu Asp Ile Leu Gln Leu Leu Leu Asp Tyr Gly Cys Gln
145 150 155 160

Lys Leu Met Glu Arg Ile Gln Asn Pro Glu Tyr Ser Thr Thr Met Asp
165 170 175

Val Ala Pro Val Ile Leu Ala Ala His Arg Asn Asn Tyr Glu Ile Leu
180 185 190

Thr Met Leu Leu Lys Gln Asp Val Ser Leu Pro Lys Pro His Ala Val
 195 200 205

Gly Cys Glu Cys Thr Leu Cys Ser Ala Lys Asn Lys Lys Asp Ser Leu
 210 215 220

Arg His Ser Arg Phe Arg Leu Asp Ile Tyr Arg Cys Leu Ala Ser Pro
 225 230 235 240

Ala Leu Ile Met Leu Thr Glu Glu Asp Pro Ile Leu Arg Ala Phe Glu
 245 250 255

Leu Ser Ala Asp Leu Lys Glu Leu Ser Leu Val Glu Val Glu Phe Arg
 260 265 270

Asn Asp Tyr Glu Glu Leu Ala Arg Gln Cys Lys Met Phe Ala Lys Asp
 275 280 285

Leu Leu Ala Gln Ala Arg Asn Ser Arg Glu Leu Glu Val Ile Leu Asn
 290 295 300

His Thr Ser Ser Asp Glu Pro Leu Asp Lys Arg Gly Leu Leu Glu Glu
 305 310 315 320

Arg Met Asn Leu Ser Arg Leu Lys Leu Ala Ile Lys Tyr Asn Gln Lys
 325 330 335

Glu Phe Val Ser Gln Ser Asn Cys Gln Gln Phe Leu Asn Thr Val Trp
 340 345 350

Phe Gly Gln Met Ser Gly Tyr Arg Arg Lys Pro Thr Cys Lys Lys Ile
 355 360 365

Met Thr Val Leu Thr Val Gly Ile Phe Trp Pro Val Leu Ser Leu Cys
 370 375 380

Tyr Leu Ile Ala Pro Lys Ser Gln Phe Gly Arg Ile Ile His Thr Pro
 385 390 395 400

Phe Met Lys Phe Ile Ile His Gly Ala Ser Tyr Phe Thr Phe Leu Leu
 405 410 415

Leu Leu Asn Leu Tyr Ser Leu Val Tyr Asn Glu Asp Lys Lys Asn Thr
 420 425 430

Met Gly Pro Ala Leu Glu Arg Ile Asp Tyr Leu Leu Ile Leu Trp Ile

435

440

445

Ile Gly Met Ile Trp Ser Asp Ile Lys Arg Leu Trp Tyr Glu Gly Leu
 450 455 460

Glu Asp Phe Leu Glu Glu Ser Arg Asn Gln Leu Ser Phe Val Met Asn
 465 470 475 480

Ser Leu Tyr Leu Ala Thr Phe Ala Leu Lys Val Val Ala His Asn Lys
 485 490 495

Phe His Asp Phe Ala Asp Arg Lys Asp Trp Asp Ala Phe His Pro Thr
 500 505 510

Leu Val Ala Glu Gly Leu Phe Ala Phe Ala Asn Val Leu Ser Tyr Leu
 515 520 525

Arg Leu Phe Phe Met Tyr Thr Ser Ser Ile Leu Gly Pro Leu Gln
 530 535 540

Ile Ser Met Gly Gln Met Leu Gln Asp Phe Gly Lys Phe Leu Gly Met
 545 550 555 560

Phe Leu Leu Val Leu Phe Ser Phe Thr Ile Gly Leu Thr Gln Leu Tyr
 565 570 575

Asp Lys Gly Tyr Thr Ser Lys Glu Gln Lys Asp Cys Val Gly Ile Phe
 580 585 590

Cys Glu Gln Gln Ser Asn Asp Thr Phe His Ser Phe Ile Gly Thr Cys
 595 600 605

Phe Ala Leu Phe Trp Tyr Ile Phe Ser Leu Ala His Val Ala Ile Phe
 610 615 620

Val Thr Arg Phe Ser Tyr Gly Glu Glu Leu Gln Ser Phe Val Gly Ala
 625 630 635 640

Val Ile Val Gly Thr Tyr Asn Val Val Val Val Ile Val Leu Thr Lys
 645 650 655

Leu Leu Val Ala Met Leu His Lys Ser Phe Gln Leu Ile Ala Asn His
 660 665 670

Glu Asp Lys Glu Trp Lys Phe Ala Arg Ala Lys Leu Trp Leu Ser Tyr
 675 680 685

Phe Asp Asp Lys Cys Thr Leu Pro Pro Pro Phe Asn Ile Ile Pro Ser
 690 695 700

Pro Lys Thr Ile Cys Tyr Met Ile Ser Ser Leu Ser Lys Trp Ile Cys
 705 710 715 720

Ser His Thr Ser Lys Gly Lys Val Lys Arg Gln Asn Ser Leu Lys Glu
 725 730 735

Trp Arg Asn Leu Lys Gln Lys Arg Asp Glu Asn Tyr Gln Lys Val Met
 740 745 750

Cys Cys Leu Val His Arg Tyr Leu Thr Ser Met Arg Gln Lys Met Gln
 755 760 765

Ser Thr Asp Gln Ala Thr Val Glu Asn Leu Asn Glu Leu Arg Gln Asp
 770 775 780

Leu Ser Lys Phe Arg Asn Glu Ile Arg Asp Leu Leu Gly Phe Arg Thr
 785 790 795 800

Ser Lys Tyr Ala Met Phe Tyr Pro Arg Asn
 805 810

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 <213> Drosophila melanogaster

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Gly Val Lys Lys Ile Leu Glu Glu Tyr Gln Gly Thr Asp Lys Phe Asn
 20 25 30

Ile Asn Cys Thr Asp Pro Met Asn Arg Ser Ala Leu Ile Ser Ala Ile
 35 40 45

Glu Asn Glu Asn Phe Asp Leu Met Val Ile Leu Leu Glu His Asn Ile
 50 55 60

Glu Val Gly Asp Ala Leu Leu His Ala Ile Ser Glu Glu Tyr Val Glu
 65 70 75 80

Ala Val Glu Glu Leu Leu Gln Trp Glu Glu Thr Asn His Lys Glu Gly
 85 90 95

Gln Pro Tyr Ser Trp Glu Ala Val Asp Arg Ser Lys Ser Thr Phe Thr
 100 105 110

Val Asp Ile Thr Pro Leu Ile Leu Ala Ala His Arg Asn Asn Tyr Glu
 115 120 125

Ile Leu Lys Ile Leu Leu Asp Arg Gly Ala Thr Leu Pro Met Pro His
 130 135 140

Asp Val Lys Cys Gly Cys Asp Glu Cys Val Thr Ser Gln Thr Thr Asp
 145 150 155 160

Ser Leu Arg His Ser Gln Ser Arg Ile Asn Ala Tyr Arg Ala Leu Ser
 165 170 175

Ala Ser Ser Leu Ile Ala Leu Ser Ser Arg Asp Pro Val Leu Thr Val
 180 185 190

Phe Gln Leu Ser Trp Glu Leu Lys Arg Leu Gln Ala Met Glu Ser Glu
 195 200 205

Phe Arg Ala Glu Tyr Thr Glu Met Arg Gln Met Val Gln Asp Phe Gly
 210 215 220

Thr Ser Leu Leu Asp His Ala Arg Thr Ser Met Glu Leu Glu Val Met
 225 230 235 240

Leu Asn Phe Asn His Glu Pro Ser His Asp Ile Trp Cys Leu Gly Gln
 245 250 255

Arg Gln Thr Leu Glu Arg Leu Lys Leu Ala Ile Arg Tyr Lys Gln Lys
 260 265 270

Thr Phe Val Ala His Pro Asn Val Gln Gln Leu Leu Ala Ala Ile Trp
 275 280 285

Tyr Asp Gly Leu Pro Gly Phe Arg Arg Lys Gln Ala Ser Gln Gln Leu
 290 295 300

Met Asp Val Val Lys Leu Gly Cys Ser Phe Pro Ile Tyr Ser Leu Lys
 305 310 315 320

Tyr Ile Leu Ala Pro Asp Ser Glu Gly Ala Lys Phe Met Arg Lys Pro

325

330

335

Phe Val Lys Phe Ile Thr His Ser Cys Ser Tyr Met Phe Phe Leu Met
 340 345 350

Leu Leu Gly Ala Ala Ser Leu Arg Val Val Gln Ile Thr Phe Glu Leu
 355 360 365

Leu Ala Phe Pro Trp Met Leu Thr Met Leu Glu Asp Trp Arg Lys His
 370 375 380

Glu Arg Gly Ser Leu Pro Gly Pro Ile Glu Leu Ala Ile Ile Thr Tyr
 385 390 395 400

Ile Met Ala Leu Ile Phe Glu Glu Leu Lys Ser Leu Tyr Ser Asp Gly
 405 410 415

Leu Phe Glu Tyr Ile Met Asp Leu Trp Asn Ile Val Asp Tyr Ile Ser
 420 425 430

Asn Met Phe Tyr Val Thr Trp Ile Leu Cys Arg Ala Thr Ala Trp Val
 435 440 445

Ile Val His Arg Asp Leu Trp Phe Arg Gly Ile Asp Pro Tyr Phe Pro
 450 455 460

Arg Glu His Trp His Pro Phe Asp Pro Met Leu Leu Ser Glu Gly Ala
 465 470 475 480

Phe Ala Ala Gly Met Val Phe Ser Tyr Leu Lys Leu Val His Ile Phe
 485 490 495

Ser Ile Asn Pro His Leu Gly Pro Leu Gln Val Ser Leu Gly Arg Met
 500 505 510

Ile Ile Asp Ile Ile Lys Phe Phe Phe Ile Tyr Thr Leu Val Leu Phe
 515 520 525

Ala Phe Gly Cys Gly Leu Asn Gln Leu Leu Trp Tyr Tyr Ala Glu Leu
 530 535 540

Glu Lys Asn Lys Cys Tyr His Leu His Pro Asp Val Ala Asp Phe Asp
 545 550 555 560

Asp Gln Glu Lys Ala Cys Thr Ile Trp Arg Arg Phe Ser Asn Leu Phe
 565 570 575

Glu Thr Ser Gln Ser Leu Phe Trp Ala Ser Phe Gly Leu Val Asp Leu
 580 585 590

Val Ser Phe Asp Leu Ala Gly Ile Lys Ser Phe Thr Arg Phe Trp Ala
 595 600 605

Leu Leu Met Phe Gly Ser Tyr Ser Val Ile Asn Ile Ile Val Leu Leu
 610 615 620

Asn Met Leu Ile Ala Met Met Ser Asn Ser Tyr Gln Ile Ile Ser Glu
 625 630 635 640

Arg Ala Asp Thr Glu Trp Lys Phe Ala Arg Ser Gln Leu Trp Met Ser
 645 650 655

Tyr Phe Glu Asp Gly Gly Thr Ile Pro Pro Pro Phe Asn Leu Cys Pro
 660 665 670

Asn Met Lys Met Leu Arg Lys Thr Leu Gly Arg Lys Arg Pro Ser Arg
 675 680 685

Thr Lys Ser Phe Met Arg Lys Ser Met Glu Arg Ala Gln Thr Leu His
 690 695 700

Asp Lys Val Met Lys Leu Leu Val Arg Arg Tyr Ile Thr Ala Glu Gln
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Arg Arg Arg Asp Asp Tyr Gly Ile Thr Glu Asp Asp Ile Ile Glu Val
 725 730 735

Arg Gln Asp Ile Ser Ser
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 <213> Drosophila melanogaster

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Leu Glu Glu Lys Lys Phe Leu Leu Ala Val Glu Arg Gly Asp Met Pro
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Asn Val Arg Arg Ile Leu Gln Lys Ala Leu Arg His Gln His Ile Asn
 20 25 30

Ile Asn Cys Met Asp Pro Leu Gly Arg Arg Ala Leu Thr Leu Ala Ile
 35 40 45

Asp Asn Glu Asn Leu Glu Met Val Glu Leu Leu Val Val Met Gly Val
 50 55 60

Glu Thr Lys Asp Ala Leu Leu His Ala Ile Asn Ala Glu Phe Val Glu
 65 70 75 80

Ala Val Glu Leu Leu Glu His Glu Glu Leu Ile Tyr Lys Glu Gly
 85 90 95

Glu Pro Tyr Ser Trp Gln Lys Val Asp Ile Asn Thr Ala Met Phe Ala
 100 105 110

Pro Asp Ile Thr Pro Leu Met Leu Ala Ala His Lys Asn Asn Phe Glu
 115 120 125

Ile Leu Arg Ile Leu Leu Asp Arg Gly Ala Ala Val Pro Val Pro His
 130 135 140

Asp Ile Arg Cys Gly Cys Glu Glu Cys Val Arg Leu Thr Ala Glu Asp
 145 150 155 160

Ser Leu Arg His Ser Leu Ser Arg Val Asn Ile Tyr Arg Ala Leu Cys
 165 170 175

Ser Pro Ser Leu Ile Cys Leu Thr Ser Asn Asp Pro Ser Ser Thr Ala
 180 185 190

Phe Gln Leu Ser Trp Glu Leu Arg Asn Leu Ala Leu Thr Glu Gln Glu
 195 200 205

Cys Lys Ser Glu Tyr Met Asp Leu Arg Arg Gln Cys Gln Lys Phe Ala
 210 215 220

Val Asp Leu Leu Asp Gln Thr Arg Thr Ser Asn Glu Leu Ala Ile Ile
 225 230 235 240

Leu Asn Tyr Asp Pro Gln Met Ser Ser Tyr Glu Pro Gly Asp Arg Met
 245 250 255

Ser Leu Thr Arg Leu Val Gln Ala Ile Ser Tyr Lys Gln Lys Lys Phe
 260 265 270

Val Ala His Ser Asn Ile Gln Gln Leu Leu Ser Ser Ile Trp Tyr Asp

275

280

285

Gly Leu Pro Gly Phe Arg Arg Lys Ser Ile Val Asp Lys Val Ile Cys
 290 295 300

Ile Ala Gln Val Ala Val Leu Phe Pro Leu Tyr Cys Leu Ile Tyr Met
 305 310 315 320

Cys Ala Pro Asn Cys Arg Thr Gly Gln Leu Met Arg Lys Pro Phe Met
 325 330 335

Lys Phe Leu Ile His Ala Ser Ser Tyr Leu Phe Phe Leu Phe Ile Leu
 340 345 350

Ile Leu Val Ser Gln Arg Ala Asp Asp Asp Phe Val Arg Ile Phe Gly
 355 360 365

Thr Thr Arg Met Lys Lys Glu Leu Ala Glu Gln Glu Leu Arg Gln Arg
 370 375 380

Gly Gln Thr Pro Ser Lys Leu Glu Leu Ile Val Val Met Tyr Val Ile
 385 390 395 400

Gly Phe Val Trp Glu Glu Val Lys Glu Ile Phe Ala Val Gly Met Lys
 405 410 415

Ser Tyr Leu Arg Asn Met Trp Asn Phe Ile Asp Phe Leu Arg Asn Ser
 420 425 430

Leu Tyr Val Ser Val Met Cys Leu Arg Ala Phe Ala Tyr Ile Gln Gln
 435 440 445

Ala Thr Glu Ile Ala Arg Asp Pro Gln Met Ala Tyr Ile Pro Arg Glu
 450 455 460

Lys Trp His Asp Phe Asp Pro Gln Leu Ile Ala Glu Gly Leu Phe Ala
 465 470 475 480

Ala Ala Asn Val Phe Ser Ala Leu Lys Leu Val His Leu Phe Ser Ile
 485 490 495

Asn Pro His Leu Gly Pro Leu Gln Ile Ser Leu Gly Arg Met Val Ile
 500 505 510

Asp Ile Val Lys Phe Phe Ile Tyr Thr Leu Val Leu Phe Ala Phe
 515 520 525

Ala Cys Gly Leu Asn Gln Leu Leu Trp Tyr Phe Ala Ala Leu Glu Lys
 530 535 540

Ser Lys Cys Tyr Val Leu Pro Gly Gly Glu Ala Asp Trp Gly Ser His
 545 550 555 560

Gly Asp Ser Cys Met Lys Trp Arg Arg Phe Gly Asn Leu Phe Glu Ser
 565 570 575

Ser Gln Ser Leu Phe Trp Ala Ser Phe Gly Met Val Gly Leu Asp Asp
 580 585 590

Phe Glu Leu Ser Gly Ile Lys Ser Tyr Thr Arg Phe Trp Gly Leu Leu
 595 600 605

Met Phe Gly Ser Tyr Ser Val Ile Asn Val Ile Val Leu Leu Asn Leu
 610 615 620

Leu Ile Ala Met Met Ser Asn Ser Tyr Ala Met Ile Asp Glu His Ser
 625 630 635 640

Asp Thr Glu Trp Lys Phe Ala Arg Thr Lys Leu Trp Met Ser Tyr Phe
 645 650 655

Glu Asp Ser Ala Thr Leu Pro Pro Phe Asn Val Leu Pro Ser Val
 660 665 670

Lys Trp Val Ile Arg Ile Phe Arg Lys Ser Ser Lys Thr Ile Asp Arg
 675 680 685

Gln Arg Ser Lys Lys Arg Lys Glu Gln Glu Gln Phe Ser Glu Tyr Asp
 690 695 700

Asn Ile Met Arg Ser Leu Val Trp Arg Tyr Val Ala Ala Met His Arg
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Lys Phe Glu Asn Asn Pro Val Ser Glu Asp Asp Ile Asn Glu Val Lys
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Ser Glu Ile Asn Thr
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<213> *Caenorhabditis elegans*

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Asn Cys Leu Asp Ser Met Gly Arg Thr Ala Leu Glu Ile Ala Val Asp
35 40 45

Asn Glu Asn Met Glu Val Val Glu Leu Leu Leu Gln Gln Pro Asp Ile
50 55 60

Arg Ile Gly Asn Ala Leu Leu Cys Ala Ile Arg Glu Gly Val Tyr Arg
65 70 75 80

Leu Val Glu Val Leu Val Asn His Pro Asn Ile Thr Arg Glu Met Leu
85 90 95

Gly Asp Gly Trp Ser Gln Ala Leu Asp Pro Ser Glu Ala Ala Ser Ala
100 105 110

Glu Tyr Ser Ser Asp Ile Ser Pro Val Ile Leu Ala Ala Gln Leu Asn
115 120 125

Gln Phe Glu Ile Leu Gln Met Leu Ile Arg Lys Asp Ala Ser Ile Glu
130 135 140

Lys Pro His Arg His Ser Cys Ile Cys Glu Thr Cys Asp Arg Glu Arg
145 150 155 160

Leu Asn Asp Ser Leu Gln Tyr Ser Leu Lys Arg Ile Asn Thr Phe Arg
165 170 175

Ala Leu Ala Ser Pro Ala Trp Met Ser Leu Thr Ser Pro Asp Pro Ile
180 185 190

Leu Ser Ala Phe Lys Leu Ser Trp Asp Leu Gln Arg Leu Ala Phe Glu
195 200 205

Glu His Glu Phe Lys Glu Thr Tyr Leu Gln Leu Ser Glu Gln Cys Lys
210 215 220

Gln Tyr Ser Cys Asp Leu Leu Ser Gln Cys Arg Ser Ser Glu Glu Val

225

230

235

240

Ile Ala Ile Leu Asn Lys Asp Gly Asn Val Asn Asp Asp Asn Ile Asp
 245 250 255

Val Trp Ala Ser Lys Leu Ser Leu Ser Arg Leu Lys Leu Ala Ile Lys
 260 265 270

Tyr Glu Gln Lys Ala Phe Val Ser His Pro His Cys Gln Gln Leu Leu
 275 280 285

Thr Ser Ile Trp Tyr Glu Gly Ile Pro Tyr Arg Gln Arg Ser Gly Thr
 290 295 300

Trp Ala Asn Phe Phe Leu Tyr Ala Phe Leu Leu Phe Leu Trp Pro Ile
 305 310 315 320

Phe Cys Leu Met Tyr Ile Leu Met Pro Lys Ser Arg Leu Gly Arg Leu
 325 330 335

Val Arg Ser Pro Phe Met Lys Phe Phe Tyr Tyr Ser Val Ser Phe Ala
 340 345 350

Thr Phe Leu Gly Leu Leu Thr Trp Ala Thr Phe Glu Asp Tyr Arg Tyr
 355 360 365

Glu Lys Gly Glu Arg Gly Gly Met Thr Arg Ala Ser Asp Arg Gly Pro
 370 375 380

Pro Ala Thr Trp Val Glu Ser Leu Val Phe Thr Trp Val Ile Gly Met
 385 390 395 400

Leu Trp Ser Glu Ile Lys Gln Leu Trp Glu Glu Gly Phe Lys Arg Tyr
 405 410 415

Met Arg Gln Trp Trp Asn Trp Leu Asp Phe Leu Met Ile Cys Leu Tyr
 420 425 430

Leu Cys Thr Ile Ser Ile Arg Leu Ser Ala Tyr Tyr Ile Phe Thr Tyr
 435 440 445

Arg Glu Asp Pro Tyr Arg Tyr Thr Val Arg Thr Tyr Trp Thr Ser Glu
 450 455 460

Glu Pro Met Leu Val Ala Glu Ala Leu Phe Ala Val Gly Asn Val Phe
 465 470 475 480

Ser Phe Ala Arg Ile Ile Tyr Leu Phe Gln Thr Asn Pro Tyr Leu Gly
 485 490 495

Pro Leu Gln Ile Ser Leu Gly Cys Met Leu Val Asp Val Ala Lys Phe
 500 505 510

Cys Phe Ile Phe Val Leu Ile Ile Ser Ser Phe Ser Ile Gly Leu Ala
 515 520 525

Gln Leu Tyr Trp Tyr Asp Pro Asn Thr Asp Val Cys Leu Pro Gly
 530 535 540

Ala Thr Cys Lys His Ser Ser Asn Val Phe Ser Ser Ile Ala Asp Ser
 545 550 555 560

Tyr Leu Thr Leu Leu Trp Ser Leu Phe Ser Ile Thr Lys Pro Glu Asp
 565 570 575

Thr Asp Val Val Glu Asn His Lys Ile Thr Gln Trp Val Gly Gln Gly
 580 585 590

Met Phe Ile Met Tyr His Cys Thr Ser Ile Ile Val Leu Leu Asn Met
 595 600 605

Leu Ile Ala Met Met Ser His Ser Phe Gln Ile Ile Asn Asp His Ala
 610 615 620

Asp Leu Glu Trp Lys Phe His Arg Thr Lys Leu Trp Met Ala His Phe
 625 630 635 640

Asp Glu Gly Ser Ser Leu Pro Pro Phe Asn Ile Ile Val Thr Pro
 645 650 655

Lys Ser Leu Ile Tyr Val Met Asn Cys Leu Phe Asn Thr Val Arg Trp
 660 665 670

Leu Leu Gly Lys Tyr Thr Tyr Gln Lys Asn Arg Asn Arg Ala Thr Ile
 675 680 685

Arg Arg Pro Gly Tyr Ser Arg Lys Arg Asn Glu Met Glu Lys Ser Gly
 690 695 700

Gly His Asp Asp Asp Ser Leu Lys Pro Leu Thr Tyr Ala Asp Ile Ile
 705 710 715 720

Thr Arg Leu Val Ala Arg Phe Ile His Gln Thr Lys Lys Asp Met Lys
 725 730 735

Met Asp Gly Val Asn Glu Asp Asp Leu His Glu Ile Lys Gln Asp Ile
 740 745 750

Ser Ser

<210> 29
 <211> 183
 <212> PRT
 <213> Homo sapiens

<400> 29

Gln Phe Leu Phe Trp Thr Met Phe Gly Met Glu Glu His Ala Val Val
 1 5 10 15

Asp Val Pro Gln Phe Leu Val Pro Glu Phe Ala Gly Arg Ala Leu Tyr
 20 25 30

Gly Ile Phe Thr Ile Ile Met Val Ile Val Leu Leu Asn Met Leu Ile
 35 40 45

Ala Met Ile Thr Asn Ser Phe Gln Lys Ile Glu Asp Asp Ala Asp Val
 50 55 60

Glu Trp Thr Phe Ala Arg Ser Lys Leu Tyr Leu Phe Tyr Phe Glu Gly
 65 70 75 80

Leu Thr Leu Pro Val Pro Phe Asn Ile Leu Pro Ser Ser Lys Ala Val
 85 90 95

Phe Tyr Leu Leu Arg Arg Ile Cys Gln Phe Ile Cys Cys Cys Cys Ser
 100 105 110

Cys Cys Lys Thr Lys Lys Pro Asp Tyr Pro Pro Ile Ile Thr Phe Ala
 115 120 125

Asn Pro Arg Ala Gly Ala Val Pro Gly Glu Gly Glu Arg Gly Ser Tyr
 130 135 140

Arg Leu His Val Ile Lys Ala Leu Val Gln Arg Tyr Thr Glu Thr Ala
 145 150 155 160

Arg Arg Glu Phe Glu Glu Thr Arg Arg Lys Asp Leu Gly Asn Arg Leu

165

170

175

Thr Glu Leu Thr Lys Thr Ile
180

<210> 30
<211> 117
<212> PRT
<213> Homo sapiens

<400> 30

Thr Ser Val Val Leu Lys Tyr Asp His Lys Phe Ile Glu Asn Ile Gly
1 5 10 15

Tyr Val Leu Tyr Gly Ile Tyr Asn Val Thr Met Val Val Val Leu Leu
20 25 30

Asn Met Leu Ile Ala Met Ile Asn Ser Ser Tyr Gln Glu Ile Glu Asp
35 40 45

Asp Ser Asp Val Glu Trp Lys Phe Ala Arg Ser Lys Leu Trp Leu Ser
50 55 60

Tyr Phe Asp Asp Gly Lys Thr Leu Pro Pro Pro Phe Ser Leu Val Pro
65 70 75 80

Ser Pro Lys Ser Phe Val Tyr Phe Ile Met Arg Ile Val Asn Phe Pro
85 90 95

Lys Cys Arg Arg Arg Leu Gln Lys Asp Ile Gly Asn Gly Glu Trp
100 105 110

Gly Asn Ser Lys Ser
115